



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,326	10/31/2003	Nobuyuki Mise	500.40410VX1	8518
20457	7590	12/22/2005	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP			BRYANT, DELORIS S	
1300 NORTH SEVENTEENTH STREET			ART UNIT	
SUITE 1800			PAPER NUMBER	
ARLINGTON, VA 22209-3873			2813	

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

21

Office Action Summary

Application No.

10/697,326

Applicant(s)

MISE ET AL.

Examiner

Deloris Bryant

Art Unit

2813

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/31/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/14/04 10/31/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's response to restriction requirement and applicant's election of Group II, claim 3, drawn to a device, without traverse is acknowledged.
2. Examiner believes that claim 3 in dependent form shall be construed to include all the limitations of the claim incorporated by reference. Thus, examiner is withdrawing previous restriction of claims 1, 2 and 4, drawn to process and claim 3, drawn to device. Prosecution will commence on claims 1-4 without restriction.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "solid angle" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

Art Unit: 2813

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 3 is objected to because of the following informalities: claim 3 as written "a semiconductor device according to claim 2" is not considered to be a proper dependent claim. Claim 3 should read "a semiconductor device made by the method of claim 2". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear as to what exactly is a solid angle and from what surface is this solid angle formed. Clarification is also needed as to how one solid angle is made smaller than another solid angle from a different surface.
6. Claim 3 is rejected based on its dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Nogami (US 6,436,304). Nogami discloses a semiconductor device manufacturing method, comprising the steps of: measuring an ion current density distribution in a plasma processing apparatus (col. 5, lns 6-26), and ascertaining whether or not said measured distribution is in compliance with an ion current density distribution that becomes a criterion (col. 6, lns 36-55).

8. Claims 2, 3 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Hashimoto et al (US 5,779,925). As best understood, Hashimoto discloses a semiconductor device manufacturing method, comprising the steps of: exposing a wafer (Fig. 1A; 9) to a plasma (col. 4, lns 48-60), said wafer (Fig. 1A; 9) including a semiconductor (Fig. 2A; 13) or a conductor, an insulator (Fig. 2A; 14a-b) formed on said semiconductor (Fig. 2A; 13) or said conductor and having a region in which a thickness has been made locally thin (Fig. 2A; 14b), and a second conductor (Fig. 2A; 15a-b) provided on said insulator (Fig. 2A; 14a-b), one of said semiconductor or said conductor

Art Unit: 2813

and said second conductor having a second region, a solid angle formed from a surface of which is made smaller than a solid angle formed from a surface of a first region (Fig. 2A), measuring an ion current density of said plasma (col. 5, Ins 9-10; col. 11, Ins 46-47), and manufacturing said semiconductor device based on said measured ion current density. The embodiment depicted in Fig. 2A establishes inferences for the solid angle based on the structural similarity between the patented structure shown in Fig. 2A and applicant's disclosed solid angle, i.e., both structures have the same general shape.

9. Regarding claim 3, Hashimoto discloses a semiconductor device made by the method of claim 2 wherein said first region is provided in said semiconductor or conductor (Fig. 2A).

10. Regarding claim 4, Hashimoto discloses a semiconductor device manufacturing method, comprising the steps of: forming, on a wafer (Fig. 1A; 9), a first region into which an ion and an electron are launched (Fig. 4B) and a second region into which said ion is launched but said electron is not launched (Fig. 4A), exposing said wafer (Fig. 1A, 9) to a plasma (col. 4, Ins 48-60), measuring an ion current density of said plasma by utilizing said first region and said second region (col. 5, Ins 9-10; col. 11, Ins 46-47), and manufacturing said semiconductor device based on said measured ion current density.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Art Unit: 2813

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deloris Bryant whose telephone number is (571) 272-8670. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dsb


GEORGE ECKERT
PRIMARY EXAMINER